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Agriculture.

Agricultural statistics. Crops and livestock of the State of Colorado, 1931. With revisions for 1929 and 1932. 91 p. Colorado State Board of Immigration, Division of Agricultural Statistics. Bulletin No. 89.

Domestic allotment plan. New Agricultural Review. v. 1, no. 10. August, 1932. p. 8-10. Claims 1. Tariff pretection is made effective on domestic consumption of products of which there is exportable surplus. 2. Income of farmers definitely increased. 3. Definite method provided for farmers to control production. 4. No export dumping involved. 5. No price fixing involved and no interference with present marketing agencies. 6. Consumers protected. 7. No compulsion on any individual farmer to join in plan. 8. No new Government appropriation required. 9. No dictation from Washington administration decentralized through State, county and townships committees.

Effect of the seasonality of agriculture on Iowa banking: Preliminary report. By Fred L. Garlock. 1932. 20 p. Mimeographed. U. S. Department of Agriculture. Bureau of Agricultural Economics.

Engineering leadership as a policy for agriculture. By Arthur Huntington. Agricultural Engineering. v. 13, no. 8. August, 1932. p. 205-208. Credited mass production, but seemingly given little thought to mass distribution and mass consumption. Editorial p. 220.

Factors influencing corn prices. By Rex W. Cox. 1931. 36 p. Minnesota Agricultural Experiment Station, Technical Bulletin no. 81.

Huge federal agricultural loans. By Paul Bestor. New Agricultural Review. v. 1, no. 10. August, 1932. p. 6-8.

Ohio agricultural statistics for 1929, 1930, 1931. 1932. 58 p. Ohio Agricultural Experiment Station. Bulletin no. 503.

Agriculture. (Cont'd)

Ups and downs of agriculture. By Charles J. Brand. American Fertilizer v. 76, no. 13. June 18, 1932. p. 19-20, 36, 38, 40, 42, 44. Importance of agriculture to national life; present and past prices of farm products; farmers' selling prices, and buying prices; farmer and tax problem; farm laborer and tenant; debits and cost of credit; inelasticity of consumption of crops; migration of farm production; shifts from fertilizer using areas.

Air Conditioning.

Air conditioning. By C. Theodore Larson. Architectural Record. v. 72, no. 3. September, 1932. p. 204-215. Why do we need conditioned air? Recommended atmospheres. How is conditioned air produced?

Air conditioning and cooling, using electricity for power and for ice cooling. By Robert T. Brizzolara. Refrigeration. v. 32, no. 2. August, 1932. p. 24-25.

Air conditioning and the humble hen egg. By Thos. H. Hart. Aerologist. v. 8, no. 9. September, 1932. p. 7-8, 27.

Blow hot - blow cold. By C. Stanley Taylor. Country Life. v. 62, no. 1. May, 1932. p. 72-76.

Comfort zone for still and moving air, based upon the wet bulb temperature as determining human comfort. By E. V. Hill. Aerologist. v. 8, no. 9. September, 1932. p. 5-6.

House cooling by the absorption system. By Donald B. Knight. Refrigerating Engineering. V. 24, no. 2. August, 1932. p. 89-94, 106. New mthod uses absorption machine at atmospheric pressure.

Refrigeration applied to air conditioning. By A. N. Chandler. Pt. III. Southern Power Journal. V. 50, no. 9. September, 1932. p. 25-28. Concerns equipment, in design and type available, and in detail of installation and operation, used when ice is cooling medium.

Associations.

Proceedings of the eighth annual convention of the National Fertilizer Association. June 6-8, 1932. 1932. 60 p.

Barns.

Modern barn plans. Rural New Yorker. v. 91, no. 5228. September 3, 1932. p. 739-740.

Building construction.

Comparing the cost of different types of floor construction. By H. Vandervoort Walsh and Alexander T. Saxe. Pencil Points. v. 13, no. 8. August, 1932. p. 555-560.

Waterproofing the cellar. By J. Paul Atwood. American Home. v. 8, no. 1. April, 1932. p. 28, 62-64.

Columbia Basin.

Improvement of the Columbia River. By Thomas M. Robins. Civil Engineering. v. 2, no. 9. September, 1932. p. 563-567. Digest of report covering subjects of navigation, flood control, hydro-electric power and irrigation.

Concrete.

Tests of integral and surface waterproofings for concrete. Engineering. v. 134, no. 3473. August 5, 1932. p. 147-148.

Cotton.

Gin cost analyses given fine study by large company. Cotton Ginners' Journal. v. 3, no. 11. August, 1932. p. 7, 9.

Mechanical harvesting of cotton. By H. P. Smith and others. 1932. 72 p. Texas Agricultural Experiment Station Bulletin no. 452.

Dams.

Automatic sector gates for Coolidge dam spillway. By Paul Baumann. Engineering News Record. v. 109, no. 6. August 11, 1932. p. 163-166. First installation in U. S. of automatic control gates of design originated in Europe. Reservoir capacity increased 21 per cent.

Construction equipment for Hoover dam. By Norman S. Gallison. Civil Engineering. v. 2, no. 9. September, 1932. p. 573-577.

Construction methods on the Cle Elum dam. By W. H. Gardiner. Civil Engineering. v. 2, no. 9. September, 1932. p. 568-572. Discussion of difficulties of tunneling and shaft sinking in soft ground.

Defelctions of Swiss dams measured. By Fred A. Noetzli. Civil Engineering. v. 2, no. 8. August, 1932. p. 489-493. Method involves use of triangulation with precision theodolites. Results show that each of dams so measured underwent small permanent deflection downstream due to load. In case of straight gravity dam, there was, in addition to deflection, apparent movement at its point of contact with foundation. Suggests that all important dams be subjected to periodic measurements such as those described so that any impending failure may be anticipated and necessary protective measures taken.

Dams. (Cont'd)

Dual use of buttress dams. By Calvin V. Davis and Franklin Hudson, Jr. Civil Engineering. v. 2, no. 8. August, 1932. p. 472-475. Basic economies obtained by building power and purification units into storage structures. Housing costs are large item in construction of hydro-electric power plants and therefore considerable economy can be effected by installing such units inside hollow buttress dams.

Effect of uplift on stability of straight gravity dams. By D. C. Henry. Civil Engineering. v. 2, no. 9. September, 1932. p. 580-582. Uplift pressure; uplift force; sliding factor analyzed; shear - friction factor developed.

Uplift pressure in masonry dams. Measurements at existing structures. By Ivan E. Houk. Civil Engineering. v. 2, no. 9. September, 1932. p. 578-580. Points out that curves of observed pressures are rather closely grouped and have values usually less than those represented by straight-line variation in pressure intensity between two-thirds of full pressure at heel of dam and zero at toe.

Uplift pressure measured at Gibson dam. By Ivan E. Houk. Engineering News Record. v. 109, no. 7. August 18, 1932. p. 196-198. Observations show absence of uplift at construction joints and only nominal pressures at foundation levels. Foundation grouting effects. Editorial, p. 204.

Three dams on San Andreas fault have resisted earthquakes. Engineering News Record. v. 109, no. 8. August 25, 1932. p. 218-219. Parts of two earth dams that straddled fault were moved in 1906 quake. 8-foot shift did not disrupt 85-foot fill.

200-year-old masonry dams in use in Mexico. By Julian Hinds. Engineering News Record. v. 109, no. 9. September, 1932. p. 251-253. Built for early irrigation development, these ancient structures are notable for boldness of profile, disregard for spillway operation and excellence of their hydraulic-lime masonry; Arcos dam; Guadalupe dam.

Ditches.

Ditch cleaning experiments in Delaware. By W. D. Ellison. Agricultural Engineering. v. 13, no. 8. August 1932. p. 195-198. Work performed by hand labor has been costing landowners more than would have been required by other methods, in most instances. Further investigation necessary to determine most economical maintenance methods and equipment for various types of maintenance problems.

Drainage.

Dredge-made island drained for Mount Vernon highway. Engineering News-Record. v. 109, no. 10. September 8, 1932. p. 287-288. Water-soaked sand and muck, held in impermeable dike ring, is unwatered by cutting off source of capillary draft from below, permitting muck to dry out. Chart gives soil profile and drain plan for consolidating hydraulic fill.

Electric Service, rural.

Rural line costs in Empire State. Electrical World. v. 100, no. 9. August 27, 1932. p. 285-286. Based on conclusions from study made by Empire State Gas and Electric Association.

Electric wiring.

Plan for complete home electrification. By George Potter. Electrical World. v. 100, no. 6. August 6, 1932. p. 182-183.

Electricity on the farm.

Colonial farm goes modern. By J. F. Ham. Electricity on the Farm. v. 5, no. 9. September, 1932. p. 8-12, 16. Accurate records kept to determine just what electricity could do and at what power consumption.

"Cost of current"table. Northwest Farm Equipment Journal. v. 46, no. 8. August 1932. p. 27. Gives number of watts per hour consumed on average by motors of different sizes when working at rated load.

Electricity can be used to advantage on the small farm. By J. P. Schaenzer and C. C. Bell. Electricity on the Farm. v. 5, no. 9. September, 1932. p. 13-16.

Electricity on New England farms. II. By W. T. Ackerman. 1932. 54 p. New Hampshire Agricultural Experiment Station. Bulletin no. 266.

Electrification of farms in Virginia grows rapidly. Electrical World. v. 100, no. 6. August 6, 1932. p. 163. Since inaugurating rural electrification bureau in fall of 1927, Virginia Electric and Power Company has built 125 rural line extensions totaling 168 miles. Total of farm customers served at end of last year was 1,919, an increase of 360 over previous year, which, in turn reflected an increase of 449. Total kilowatt hours of electricity consumed by farm customers in 1929 was 992,190 and in 1931 they were increased to 2,648,883.

Farm lighting systems. By C. A. Logan. 1932. 58 p. Kansas Engineering Experiment Station. Bulletin no. 30.

Installation of electric farm motors. By B. W. Taber. Farm Implement News. v. 53, no. 26. August 18, 1932. p. 18-20.

Power on the farm. 1930. 22 p. Puget Sound Power and Light Company. Table gives motor and power requirements for farm machines.

Rural electrification facts sought in South Carolina. Electrical World. v. 100, no. 7. August 13, 1932. p. 195. Statistics sought by South Carolina Railroad Commission.

Erosion control.

Controlling moisture, erosion, and flood water. By Gottlieb Muehleisen. Agricultural Engineering. v. 13, no. 8. August 1932. p. 208. Store and keep surplus rainfall and melting snow water at home or near area on which it falls. Arrange fields by operation, crop production, etc. to absorb as much of rainfall and melting snow water as possible. Surplus stored in ponds built for that purpose. Ponds should be located near highest elevation. In depressions and ravines there should be enough ponds in size and number to retain surplus rainfall at higher elevations.

Saving surface soil and preventing erosion. By L. R. Taft. Quarterly Bulletin Michigan Agricultural Experiment Station. v. 14, no. 4. May 1932. p. 237-244. Erosion in orchards; terracing orchard land; furrowing to prevent erosion; checking up the furrows; repairing washouts and gullies; use of dams.

Tillage -- and soil drifting. By J. Macgregor Smith. Montana Farmer. v. 19, no. 22. July 15, 1932. p. 3. How tillage implements influence soil drifting on Alberta farms.

Explosives.

Blasters' Handbook. Prepared under direction of Arthur La Motte, E. I. du Pont de Nemours & Company, Inc., 1932. 252 p. Describes practical methods of using explosives for various purposes.

Farm machinery and equipment.

Agricultural implement market of France and the French colonies. 1932. 35 p. U. S. Bureau of Foreign and Domestic Commerce Trade Information Bulletin no. 794.

Corn picker does more than save labor. Farm Implement News. v. 53, no. 26. August 18, 1932. p. 16-17. Survey of picking costs on Illinois farms showed that, on average, costs per bushel for harvesting were 26 per cent lower with yields above 47½ bushels per acre than on farms where yields were below 37½ bushels and averaging 32½ bushels per acre. Where corn is husked by hand it requires 38 per cent of total man and horse labor expended on crop.

Farm equipment industry. By C. A. Cobb. Progressive Farmer. v. 47, no. 14. August 1932. p. 6. Future of American farmer rests more on his increased efficiency than on any general form of relief which may be established in contravention to natural laws. Industrial farmer who establishes his production on basis of efficiency will survive.

Farm machinery should be sheltered. Building Material Digest. March 1932. p. 24-25. More power needed to operate rusted equipment. Article is reproduced from Bulletin 115, Minnesota University.

How to determine the quantity of air and air horsepower delivered by a hammer mill fan. By John E. Nicholas. Agricultural Engineering. v.13, no. 8. August 1932. p. 214-216.

Huge plow reclaims land. Farm Implement News. v. 53, no. 26. August 18, 1932. p. 17. Operating in Orange County, California. Has two shares. Smaller one, which is of good size, is set forward and higher than larger share which is able to plow furrow 36 to 42 inches in depth and 3 feet in width. Forward share turns surface sand and Bermuda grass into deep furrow where it is covered by fertile soil turned by by larger share. Plow bottom is 4 feet high and 6 feet long. It is raised and lowered by hydraulic lift. It is reported to weigh about 4 tons and materials cost $2,000.

Milking machines. Journal of the Ministry of Agriculture. v. 39, no. 4. July 1932. p. 317-322.

New methods in grass cutting and harvesting. Tests of machinery that introduces a new system in British farming. Implement and Machinery Review. v. 58, no. 687. July 1, 1932. p. 234-237.

1932 model Sturtevant separator. American Fertilizer. v. 76, no. 13. June 18, 1932. p. 25-26, 48, 50.

Not too much machinery! Editorial. Implement and Tractor Trade Journal. v. 47, no. 17. August 13, 1932. p. 7. Machinery makes luxuries of today necessities of tomorrow. One-fourth of normal employment of today consists of work that did not exist generation ago. New machinery often imposes imaginary threat against employment but it invariably creates more new work than it replaces.

Schlayer rotary thresher tested. Farm Implement News. v. 53, no. 27. September 1, 1932. p. 16-17. Threshing is accomplished by series of staggered paddle arms revolving on shaft at 650 R. P. M. Steel rods about the size of No. 9 wire are attached to end of each paddle and extend beyond it to point where rods just clear inside housing baffles. Paddle faces are not set at right angles to direction of rotation, but each is turned slightly toward discharge end of machine so as to bat grain and straw in direction of travel. This movement of threshed material is further aided by blast set up by rotating paddles. Backfeeding either of straw or blast is prevented by spiral form of intake housing which forces material to side before it can rotate to feeder intake. In central part of threshing chamber, there are longitudinal baffles which paddle rods just clear to increase threshing action, with transverse baffles to vary speed of material going through machine. Action is one of acceleration with deceleration at baffles. Outlet blast is further controlled by large metal cone mounted on central shaft at discharge end, with wide base of cone facing intake end of machine and small end of cone at outlet where straw passes to stacker fan. Entire bottom half of threshing chamber serves as grate through which grain passes at any time between first striking of bundle at intake up to discharge end where straw is picked up by stacker fan. Grain which has fallen through grate is moved by auger to rear of machine where it is cleaned - and really cleaned. Straw was broken up into lengths averaging about 4 inches.

Farm machinery. (Cont'd.)

Shorter week for agriculture. By Research Dept. N. A. F. E. M. Farm Implement News. v. 53, no. 27. September 1, 1932. p. 20. Farmer of future will put in shorter hours in producing and harvesting crops because of more extensive use of modern equipment. As result, he will have more time to manure, lime and seed down more corn or cotton land to legumes for building up fertility of soil. More wheat land will be in summer fallow and greater attention can be devoted to weed and insect control and securing productive top soil by terracing.

Some important facts about plows and plowing. Farm Implement News. v. 53, no. 27. September 1, 1932. p. 18. There is almost as much individuality in well made plow as in fine violin. Art of plowing in future will not be confined to perfecting certain types of furrows but must be developed to overcome hindrances fo profitable crop production.

Sweet clover harvester. Wallace's Farmer. v. 57, no. 15. July 23, 1932. p. 10. Made from discarded binder. Three horses will cut from six to eight acres per day. Diagram gives exact dimensions..

Ten grain binder "ifs". Dakota Farmer. v. 52, no. 14. July 9, 1932. p. 341. Correct adjustments mean long life to farm machinery. Article gives suggestions to facilitate correct running of binder.

Farms.

Farmstead arrangement and its effect on operating costs. By H. B. White. Agricultural Engineering. v. 13, no. 8. August 1932. p. 217-218. Essentials of good farmstead: 1. Ease of access to fields, pastures, public road. 2. Good drainage around buildings. 3. Suitable size. 4. Convenient arrangement of buildings. 5. Proper distance of other buildings from house. 6. Proper distance of buildings from road.

Fertilizer spreaders.

New method of application designed to insure proper distribution. By L. R. McKinnon and Omund Lilleland. Fertilizer Green Book. v. 13, no. 7. July 1932. p. 7-9.

Ohio fertilizer placement tests with corn planters. By C. O. Reed. Agricultural Engineering. v. 13, no. 8. August 1932. p. 209-213. Table gives comparative performance of corn planter fertilizer distributors in 1929, 1930, and 1931.

Flow of water and gases.

Friction of air in elbows. By A. I. Brown. Power Plant Engineering. v. 36, no. 16. August 15, 1932. p. 630-631. Test at Engineering Experiment Station of Ohio State University show that rounded elbows have lower friction losses than square elbows with guide vanes.

Proof of the second law of thermodynamics (for systems composed of perfect gases) By Thomas H. Hazlehurst, Jr. 1932. 1087-1096p. Lehigh University. Institute of research. Circular no.78.

Frost protection.

Prevention of frost injuries in orchards and vineyards. Journal of the Department of Agriculture. v. 35, no. 11. June 15, 1932. p. 1240-1243. Smoke screens or smudges; maintaining safe degree of temperature; cost of heating system.

Fuels.

Distillate is a practical low-cost tractor fuel. By A. E. Randall. Furrow. v. 37. August-September, 1932. p. 3, 12-13. Delivers more power than gasoline when burned in two-cylinder motors.

Heating.

Heat pump efficient in warming homes. Electrical World. v. 100, no. 6. August 6, 1932. p. 169. Engineers of W. S. Barstow & Company report that heat pick-up ratios of 4.5 to 1 pick-up ratio, including fan power (which in tests was higher than necessary) 2-cent energy rate places cost of 1,000,000 B.t.u. at $1.30. Efficiency of coal-fired hot air heater over season in specific house tested was computed to be 40 per cent. Coal of 13,500 B.t.u. per lb. at $15. per long ton makes million B. t. u. cost $1.24. When used in well designed heat pump 2-cent energy is thus equivalent to coal cost of $15. ton in moderate climate areas.

Induction heating of greenhouses. By G. N. Hawley and M. R. Armstrong. Electrical World. v. 100, no. 9. August 27, 1932. p. 280-281. Report of tests made by Southern California Edison Company, Ltd. to determine heating effect of single a. c. conductors when enclosed in steel conduit.

Mechanical analysis of oil burner equipment. Fuel Oil Journal. v. 11, no. 3. September 1932. p. 19-20, 24, 26, 28, 30, 32, 34, 36.

Proper specifications for economical air heater selection. By J. R. Darnell. Southern Power Journal. v. 50, no. 9. September 1932. p. 29-31.

Hotbeds.

Electric heat for starting and growing plants. 12 p. Published by Agricultural Engineering Department of Puget Sound Power and Light Co.

Houses.

Frameless welded homes displayed in Cleveland. Electrical World. v. 100, no. 6. August 6, 1932. p. 169. It was shown that new type of house is built entirely of steel, has no frame, and yet required less steel than many homes built with steel frames. Electrically welded steel sheets comprise principal elements of construction. Steel sheets are cut and welded into panels. Panels are rustproofed and then welded together on foundation. Panels may be welded into large boxes size of each room. Steel floor composed of Z-shaped steel pieces is fabricated in such way that honeycomb effect is derived. Interior walls also may be so built. It is proposed to develop way to blow warm air into openings of floors and walls, thus creating blanket of air about each room.

Houses. (Cont'd)

Metal inclosures for houses being tried in Cleveland. Engineering News Record. v. 109, no. 6. August 11, 1932. p. 166. Methods: 1. Metal sheathing in form of bent plates, eliminating necessity for skeleton frame. 2. Steel-faced panels of fiber insulation boards, hung on structural steel frame.

Possibilities in low-cost homes of clay products. Brick and Clay Record. v. 81, no. 2. August 1932. p. 60-61. Clay products can supply distinction to small low-cost home.

Studies in the design of kitchens and kitchen equipment. By Deane G. Carter. 1932. 31 p. Arkansas Agricultural Experiment Station. Bulletin no. 276.

Use reinforced brick masonry for residential construction: Home built in Detroit reveals a cost of $40 less than for brick veneer. Brick and Clay Record. v. 81, no. 3. August 1932. p. 50-51.

Houses, remodeling.

From house to home in two weeks. Building Material Digest. March 1932. p. 6-7. Old house transformed into modern dwelling at cost of $2400.

Remodeling the farm home. By H. J. Gallagher. Electricity on the Farm. v. 5, no. 8. August 1932. p. 8-11.

Hydraulics.

Geometric versus hydraulic similitude. By Herbert D. Vogel and John Paul Dean. Civil Engineering. v. 2, no. 8. August 1932. p. 467-471. Factors to be considered when using models to study flow in open channels.

Hydraulics of open channels. By Boris A. Bakhmeteff. New York, McGraw-Hill Book Company, Inc., 1932. 329 p.

Siphon-spillway models tested against prototypes. By Herbert H. Wheaton. Engineering News Record. v. 109, no. 7. August 18, 1932. p. 187-189. Series of laboratory studies on siphon models indicates full-scale characteristics can be predicted. Data on priming and discharge conclusions on relation of models to prototype.

Insect control.

Machines for grasshopper control. Farm Implement News. v. 53, no. 26. August 18, 1932. p. 20. Endgate seeder with special built hopper, spread bait evenly over strip about rod and half wide. Tendency to clog on steep hillsides. Lime sower also gave even distribution over strip somewhat less than rod wide. Hopper of this machine is smaller than one on seeder and requires more frequent filling. Less tendency to clog. Each spreader applied bait at desired rate per acre, and with team traveling 2¼ miles per hour, seeder covered about 6 3/4 acres per hour and sower about 3¼ acres. Distributors developed by engineers of Bureau of Agricultural Engineering.

Insulation.

Cotton for insulating material. Refrigeration. v. 32, no. 2. August, 1932. p. 29. Superiority of cotton for insulating purposes demonstrated by tests of U. S. Bureau of Standards. Manufacturing costs reported indicate that cotton board can be produced cheaper than several types of board using other material for insulation. New product now being tried out in containers for shipment of "dry ice" and several selected products requiring refrigeration in transit.

Eggs and insulation - Combination for profit. By H. W. Paul. Building Material Digest. March 1932. p. 18-19. Warm chicken houses increase yield 5 to 11 eggs per month per hen. $61.00 spent in insulating hen house can pay for itself in less than 90 days.

Testing paper for electrical insulation. By Dean Harvey. Electric Journal. v. 29, no. 9. September 1932. p. 417-419.

Irrigation.

Duty of water in terms of canal capacity. By E. B. Debler. Civil Engineering. v. 2, no. 9. September, 1932. p. 546-548. Stressing need for joint engineering, agricultural, and economic study.

Ground water supplies for rice irrigation in the Grand Prairie region, Arkansas. U. S. Department of Interior, 1931. 21 p. Mimeographed. Press Release.

Irrigation and power combined by Texas Improvement District. Engineering News-Record. v. 109, no. 6. August 11, 1932. p. 153-157. Combined development of section of Rio Grande for both irrigation and power purposes, in which hydro-electric station on main irrigation canal is operated independently of irrigation district, is now approaching completion near Eagle Pass, Texas. No diversion dam in river is required, but 32-mile canal with gunite and redwood lining and inverted siphons under streams brought out many items of engineering interest in design and construction. Irrigation project and its construction methods are described in article.

Irrigation in western Washington. 32 p. Published by Agricultural Engineering Department of Puget Sound Power and Light Co.

Selecting the pump, power and piping for irrigation purposes. By O. E. Robey. Quarterly bulletin, Michigan Agricultural Experiment Station. v. 14, no. 4. May 1932. p. 247-253. Table 1. - Size of pump required for applying one inch of irrigation water on various areas. Table 2. - Recommended pipe sizes for ordinary installations. Table 3.- Horsepower required for pumping water at 50 % Pump efficiency.

Irrigation. (Cont'd)

Irrigation districts. Reclamation Era. v. 23, no. 9. September, 1932. p. 163. Irrigation districts are regarded as quasi municipal corporations. Revenues of these districts are handled on very much same plan as those of municipalities, through collection of tolls, rents, charges, and by taxation machinery provided by laws under which organized. They are political subdivisions of States. This machinery is sometimes special and entirely apart from taxing machinery of other political subdivisions, while in some cases taxing machinery of county is utilized. Method is entirely dependent upon special State laws applicable. Charges collected through medium of taxing machinery are usually referred to as special assessments measured in accordance with benefits apportioned to each tract of land.

Labor.

Shorter working time to assure full employment. By D. C. Henny. Engineering News-Record. v. 109, no. 9. September, 1932. p. 249-250. Shorter working hours and higher living standards to compensate for increased efficiency of machine and man will keep reservoir of unemployed labor low and assure balance of consumption and production.

Land.

Piece of land is not a farm. By T. C. Richardson. Farm and Ranch. v. 51, no. 13. July 1, 1932. p. 2-3, 6. When properly improved its productive capacity is greatly enhanced. Attracts both homeseekers and good tenants.

Report of the Committee on the Conservation and Administration of the Public Domain. January 1931. Washington U. S. Government Printing Office, 1931. 85 p.

Rise and fall of the Public Domain. By Herman Stabler. Civil Engineering. v. 2, no. 9. September, 1932. p. 541-545. At their maximum, public lands in continental United States amounted to amazing total of almost one half billion acres, equivalent to about half total area of country. According to early point of view, public domain was merely asset to be liquidated as quickly as possible for financial benefit of nation. Since 1841, public lands have been used chiefly as areas for settlement and as means of upbuilding nation. Under this program much of territory - almost billion acres - was disposed of. Manner in which public domain was acquired, methods of disposal, present problems of control, and particularly advisable future policies are treated.

Lighting.

"See"- levels in Lighting. By M. Luckiesh. Electrical World. v. 100, no. 8. August 20, 1932. p. 236-239. Natural causes of lighting development are still at work, but most of them have slowed down temporarily. Although natural causes will continue to aid lighting development, most of increase in lighting business will depend upon modern cultivation of old fields which have been tilled primitively.

Lubrication.

Foundation of effective lubrication. Importance of design and installation. Lubrication. v. 18, no. 8. August 1932. p. 85-96. Relation of machine design; influence of design upon lubricant refinement; necessity for primary inspection; operating factors; speed; effect of pressure; influence of temperature.

Intelligent Diesel lubrication increases efficiency, lowers maintenance cost. By J. L. Ingram. Power. v. 76, no. 3. September, 1932. p. 122-123. Lubrication is tremendously important in successful diesel operation. No more satisfactory method of assuring suitable lubrication is available than by applying practical engine-room tests. In this article author provides series of tests from his background of experience.

Miscellaneous.

Accelerated tests reveal erosion-resisting metals. By T. F. Hengstenberg. Power. v. 76, no. 3. September, 1932. p. 118-120. Specimens of various metals whirled past water jet at speeds up to 1,200 feet per second show test results that agree closely with their actual erosion as machine parts in commercial service.

Corliss engine, "Classic invention". Science News Letter. v. 22, no. 591. August 6, 1932. p. 86-88. One of major improvements in steam engine is Corliss valve and its regulating governor.

Development of electrical machinery in the United States. By F. D. Newbury and P. L. Alger. General Electric Review. v. 35, no. 8. August, 1932. p. 422-430. Pt. 1. Generating apparatus.

Establishment, growth, and influence of shelter belts in the Prairie region of Minnesota. By E. G. Cheyney. 1931. 36 p. Minnesota. Agricultural Experiment Station Bulletin no. 285.

Field curing of hay as influenced by plant physiological reactions. By T. N. Jones and L. O. Palmer. Agricultural Engineering. v. 13, no. 8. August 1932. p. 199-200. Report of progress in study conducted by Mississippi Agricultural Experiment Station to determine factors involved in cutting of hay and their relationship, paying particular attention to plant physiological reactions.

First and second order triangulation in Oregon. (1927 datum) By Clarence H. Swick. 1932. 89 p. U. S. Coast and Geodetic Survey. Special Publication no. 175.

Multi-lens aerial photographic surveys. By C. S. Reading. Civil Engineering. v. 2, no. 8. August, 1932. p. 496-500. Florida's intricate coast line remapped at low cost. Work emphasizes advantages of aerial photography not only for revision of charts but also for development of engineering projects.

Miscellaneous. (Cont'd)

New materials laboratory at Berkeley. Engineering News-Record. v. 109, no. 10. September 8, 1932. p. 284-286. University of California building provides for class and research work in testing and developing engineering materials. Equipment includes 4,000,000-lb. universal machine. Research on Hoover dam concrete and San Francisco-Oakland suspension-bridge models. Editorial p. 296.

Professional ethics for the salaried engineer. By Arthur E. Morgan. Civil Engineering. v. 2, no. 8. August, 1932. p. 494-495.

Rationalization and simplification of test requirements for liquid asphaltic materials. By E. F. Kelley and Prevost Hubbard. Public Roads. v. 13, no. 6. August 1932. p. 89-96, 104. Simplified scheme of analysis adopted; classification of materials based on viscosity and distillation tests; essential properties to be defined in specifications for liquid asphaltic products; flash point test essential as safety measure.

Research in higher education. 1932. 133 p. U. S. Department of Interior. Office of Education. Bulletin no. 12. Papers prepared for First Regional Conference on Higher Education held under joint auspices of U. S. Office of Education and University of Oregon at Eugene, Oregon. April 14, 15, and 16, 1931.

Saving cost in government by private design: Letter from Walter H. Wheeler. Engineering News Record. v. 109, no. 6. August 11, 1932. p. 173. Suggest that when publicly owned building costing more than certain sum is to be planned by public bureau, this bureau should employ also architects and engineers in private practice to prepare alternate plans and specifications to fulfill same requirements.

Scope of Bureau of Standards work: Editorial. Electrical World. v. 100, no. 7. August 13, 1932. p. 202-203. Feeling that commercial standardization and research could as well be done in industrial and university laboratories and by semi-technical trade associations as at government laboratory is something that will have to be reckoned with in adopting program for immediate future.

Shows relative wear of metals by abrasion. Automotive Industries. v. 67, no. 8. August 20, 1932. p. 231. Tests carried on by Link-Belt Co. of Indianapolis. Table gives abrasive test values heat treating steels.

Wagon-haulage equipment for levee building. By J. C. French. Engineering News-Record. v. 109, no. 8. August 25, 1932. p. 215-217. Heavy tractors, large crawler wagons, power-loading elevating graders and crawler-dragline excavators have been developed into levee-building outfits of major importance.

Pipes.

Calculating loads on sewer pipe in wide ditches. By Robley Winfrey. Brick and Clay Record. v. 81, no. 2. August 1932. p. 53-54. Results of study made to determine why quality sewer pipe fail in some installations due to faulty design of ditches.

Midwest piping handbook. July, 1930. Midwest Piping & Supply Co., Inc., St. Louis. 199 p. Gives developments in piping design, standards, specifications.

Pipe bends reduce friction and provide for expansion. By Henry C. Moffett. Power Plant Engineering. v. 36, no. 17. September 1932. p. 656-658. Discussion of common types of pipe bends and their design, inspection and application.

Value of fundamental engineering knowledge to secure pipe manufacturers. By George C. D. Lenth. Brick and Clay Record. v. 81, no. 2. August 1932. p. 52, 70. Comments on importance of investigation on calculation of loads on pipe in wide ditches conducted at Iowa Engineering Experiment Station.

Poultry houses.

Building plans and bill of materials for O. S. C. Stationary brooder house. By A. G. Lunn and W. J. Gilmore. 1932. 8 p. Oregon Agricultural College. Extension Service. Extension bulletin no. 451.

Power.

Economic balance between steam and hydro. By K. M. Irwin and Joel D. Justin. Electrical World. v. 100, no. 8. August 20, 1932. p. 240-245. Necessary to forecast characteristics of particular system in which additional capacity is required, and to determine for particular conditions whether addition of steam or hydro will give lowest total cost of power supply for system.

Revival in animal power evident. Hardware Trade Journal. v. 8, no. 8. August, 1932. p. 14-15. In places where conditions are better adapted to horse power, horse is staging strong comeback.

Power plants.

Russia completes hydro on the Dnieper River. Electrical World. v. 100, no. 9. August 27, 1932. p. 257. Maximum capacity is 900,000 h.p. Project will provide power for industrial and domestic use to territory of 70,000 square miles. Decree issued for construction of hydro-electric station at Kamyshin on left bank of Volga river to irrigate 11,250,000 acres. Two million kilowatt capacity. Dam two miles in length and 98 feet in height. Completed by 1937. Area to be irrigated higher than Volga. It will therefore be necessary every year to raise 5,500,000,000 gallons of water height of from 196 to 328 feet. New method of irrigation in which water is distributed as rain.

Public works.

Public work funds cut $44,000,000 by the Economy Act. Engineering News-Record. v. 109, no. 7. August 18, 1932. p. 206. Cut applies not only to construction work carried in regular departmental appropriations but also to public works embraced by Emergency Relief and Construction Act to extent that such projects had been previously authorized.

Public works and recovery. By David Cushman Coyle. Mechanical Engineering. v. 54, no. 9. September 1932. p. 623-624.

Pulleys.

Determining pulley sizes. By P. F. Christopher. Southern Power Journal. v. 50, no. 9. September 1932. p. 34-35. Convenient chart makes calculating simple yet accurate enough for practical purposes.

Refrigeration.

Absorption refrigerating machine. By J. W. Long. Refrigeration, Cold Storage and Air Conditioning. v. 3, no. 2. May, 1932. p. 14-21.

Care of milk and cream on the dairy farm. Hoard's Dairyman. v. 77, no. 11. June 10, 1932. Various methods of cooling milk, of varying degrees of effectiveness, are illustrated and briefly discussed. Purpose is not to detail all facts of how to do it, but to draw attention to this phase of care of milk in hope it will lead to further investigation and final action.

Heat transfer in foods. By M. A. Joslyn and G. L. Marsh. Refrigerating Engineering. v. 24, no. 2. August 1932. p. 81-88. Temperature changes in fruit, vegetable, meat and fish products during freezing and thawing.

Methyl bromide as a refrigerant. Ice and Cold Storage. v. 35, no. 412. July, 1932. p. 124-127, Comprehensive thermodynamic table in English units. Table gives properties of saturated vapour of methyl bromide.

Modern milk cooling an important factor in keeping children well. By J. E. Waggoner. Electricity on the Farm. v. 5, no. 8. August 1932. p. 14-16, 22.

Recent developments in heat transmission. By W. J. King. Refrigerating Engineering. v. 24, no. 2. August 1932. p. 76-80. Material selected with particular reference to refrigerating and air conditioning applications.

Solid carbon dioxide refrigeration control. By J. G. Bergdoll and A. W. Ruff. Ice and Refrigeration. v. 83, no. 1. July, 1932. p. 19-26. Application of system to truck body units.

Why are ammonia and carbon dioxide refrigeration combined? By H. J. Macintire. Southern Power Journal. v. 50, no. 9. September 1932. p. 18-20.

"Z process" for quick freezing launched in America. Refrigerating World. v. 67, no. 8. August 1932. p. 14-20. Series of tests by Frick Engineers.

Roofs.

Heavy snow load sustained by timber roof trusses. By Thomas F. Chace. Engineering News-Record. v. 109, no. 7. August 18, 1932. p. 189-190. Accumulated load on building in Yosemite Park equals 156 lb. per sq. foot. Stresses in roof doubled without damage. Deflections measured.

Runoff.

Discussion of the unit-graph method of estimating runoff. Engineering News-Record. v. 109, no. 8. August 25, 1932. p. 223-226. New flood formulas based on same principle as unit graph, by H. K. Barrows. Unit graph is not constant, by Charles H. Pierce. Divergent data need study to perfect the new method, by C. S. Jarvis. For peak flows or total runoff use usual methods, by C. E. Grunsky. Studies show unit graph is fundamentally sound, by Robert E. Horton. Method is checked by New England streams, by Cecil Boling. Variability of watersheds presents great weakness by George D. Clyde.

Further discussion of unit-graph method of estimating runoff. Engineering News-Record. v. 109, no. 9. September 1, 1932. p. 255-259. Short time unit graphs now being studied, by W. W. Horner. St. Francis river tests made for new method, by R. W. Gay. Applied to southern streams, results in inaccuracies, by T. Saville.

Septic tanks.

Septic tanks for farm homes. By Wellesley C. Harrington. 1932. 8 p. Massachusetts State College. Extension leaflet no. 143.

Sewage and sewage disposal.

Heat losses from sludge digestion tanks. By William Rudolfs and H. J. Miles. Civil Engineering. v. 2, no. 8. August 1932. p. 481-484. Relative radiation at different temperatures. Results of experiments made at New Jersey Agricultural Experiment Station to determine extent of heat losses from tanks maintained at temperature of most active digestion.

Silos.

Digging and filling trench silos. By M. R. Bentley. Farm and Ranch. v. 51, no. 14. July 15, 1932. p. 2. Why losses are sustained.

Economical crop storage is one of today's necessities. Building Material Digest. v. 1, no. 8. August, 1932. p. 12-13, 22. Gives typical bill of material.

Is the silo a back number? Jersey Bulletin. v. 51, no. 32. August 10, 1932. p. 1152. Recently, it is coming to be realized that silo is also convenient and practical means of handling other crops.

Silo filling costs come down. Implement and Tractor Trade Journal. v. 47, no. 17. August 13, 1932. p. 9, 16-17. Individual operations reduce expense. Less power required and many former practices are found unnecessary.

Silos. (Cont'd)

Trench silo. By E. J. Maynard. Utah Farmer. V. 25, no. 24. August, 1932. p. 3, 8-9. Gives dimensions of trench silo based on amount of silage to be fed daily. Editorial p. 6.

Trench silos for feed storage. By Irving J. Courtice. Montana Farmer. v. 19, no. 22. July 15, 1932. p. 5, 19. Advantages: low cost, permanent, freedom from freezing, ease of filling, quickly constructed.

Snow.

New spring balance for measuring water content of snow. By George D. Clyde. 1931. Reprinted from Science. v. 73, no. 1885. February 13, 1931. p. 189-190.

Snow survey to be made in Australia. Engineering News-Record. v. 109, no. 6. August 11, 1932. p. 162. Surveys to follow system used for several years in Sierra Nevada range at Nevada and California.

Soils.

Compressibility of clay increased by remolding. By Arthur Casagrande. Engineering News-Record. v. 109, no. 6. August 11, 1932. p. 159-161. Describes tests conducted at M.I.T. which show increase of compressibility of remolded clay compared with clay in undisturbed state. Also relation of this determination to design of foundations in clay.

Foundation soil overloading shown by penetration test. By Henson K. Stephenson and E. B. Feingold. Engineering News-Record. v. 109, no. 6. August 11, 1932. p. 161-162. Practical application of principles of soil mechanics..

Insure your soil. By V. S. Peterson. Successful Farming. v. 30, no. 9. September, 1932. p. 5, 40-41. To insure land against loss of fertility and top soil, use good system of soil management combined with erosion control.

New manometric apparatus for the mechanical analysis of soils and other disperse systems. By Amar Nath Puri. Soil Science. v. 34, no. 2. August, 1932. p. 115-121. Based on principle of differential liquid manometer, having mixture of aniline and benzene (of density slightly greater than water) as heavier liquid and water itself as lighter liquid.

Physical and chemical characteristics of the soils from the erosion experiment stations. By H. E. Middleton, C. S. Slater, and Horace G. Byers. 1932. 51 p. U. S. Department of Agriculture. Technical bulletin no. 316.

Preliminary report on the effect of certain chemicals on rice production and their effect on the rice soil. By L. C. Kapp. 1932. 35 p. Arkansas agricultural Experiment Station. Bulletin no. 277.

Soils. (Cont'd)

Pressure distribution in soils. Letter from C. C. Williams. Engineering News-Record. v. 109, no. 10. September 8, 1932. p. 295. Most promising procedure lies in direction of better technique in making soil tests, more discernment in their interpretation and economical methods for more thorough exploration to determine nature of underlying strata and of probable water movement.

Soil loading test practice in Europe. By Karl Terzaghi. Engineering News-Record. v. 109, no. 6. August 11, 1932. p. 158-159. Article describes and appraises unusually ingenious apparatus and methods devised by European engineers for determining ability of soils to carry foundation loads.

Soil research pays its way: Editorial. Engineering News-Record. v. 109, no. 7. August 18, 1932. p. 205. Soils present such complex problems for research to solve that knowledge naturally accumulates but slowly.

Storage houses and cellars.

Design notes on circular concrete bins for grain storage. By H. H. Frenzel. Engineering News-Record. v. 109, no. 10. September 8, 1932. p. 291-292. Principal problem centers on loads in interstice bins that cause appreciable moments. Bins in contact are more economical than spread bins of smaller storage volume.

Tractors.

Cooperative tractor catalog, 1932. 228 p. Implement and Tractor Trade Journal. Kansas City, Missouri. Illustrated directory of tractors, tractor accessories and power farming machinery.

How tractor air cleaners are tested for exacting California Service. By Dr. F. A. Brooks. Implement Record. v. 29, no. 9. September 1932. p. 15-16.

Search for cheaper tractor power: Editorial. Implement and Machinery Review. v. 58, no. 688. August 1, 1932. p. 321. Experiments conducted both in England and Sweden, concentrating on suction gas type of alternatives fed by charcoal or low temperature carbonised fuels. Results may be illusive or less necessary in view of extreme economy to which other types of tractors can now work.

Tractor field book, with power farm equipment specifications. 1932. 128 p. Published by Farm Implement News Company, Chicago.

Water.

Water and its use on the plains farm. By E. R. Parsons. Western Farm Life. v. 34, no. 14. July 15, 1932. p. 3, 14. Measuring water needs of plants; soil mulch checks evaporation; rain water useful in home.

Water heating.

Hot water for coal kitchens. By Hobart Beresford. Electricity on the Farm. v. 5, no. 8. August 1932. p. 12-13. Electric water heaters properly insulated, permit little heat to escape to atmosphere. They are quick in action and efficient.

Water pollution.

Comparison of the pollution and natural purification of the Connecticut and Delaware rivers and the Brandywine creek. By Lloyd R. Setter. 1932. 40 p. New Jersey Agricultural Experiment Station Bulletin no. 545.

Tracing the travel and changes in composition of underground pollution. By Anselmo F. Dappert. Water Works and Sewerage. v. 79, no. 8. August, 1932. p. 265-269. Bacteriological changes during progress of seepage; chemical changes during progress of seepage.

Water power.

Power commission makes ruling on allowable water-power costs. Engineering News-Record. v. 109, no. 10. September 8, 1932. p. 279-280. Actual cash outlay closely adhered to. Capitalization of earning power of franchise forbidden. Fee of subsidiary in excess of expenditures eliminated.

Water supply.

Are further studies needed on the relation of forests to water supply in New England? By C. Edward Behre. Journal of the New England Water Works Association. v. 46, no. 2. June 1932. p. 170-183. National program of erosion stream-flow research; water supply situation in northeast; What can be done by research?

Making water supply automatic. Implement and Tractor Trade Journal. v. 47, no. 17. August 13, 1932. p. 8, 17. System contains motor, pump and pressure tank.

Waterways.

Connecting Stockton with the sea. By Captain W. A. Wood, Jr. Engineering News-Record. v. 109, no. 7. August 18, 1932. p. 183-185. San Joaquin river deepened and straightened to provide 26-foot depth 44 miles above San Francisco Bay. Unusual levee construction used where immediate stability was required. Important western river improvement described.

Wood.

Plywood: Product of unusual possibilities. By Thomas D. Perry. Mechanical Engineering. v. 54, no. 9. September 1932. p. 618-622, 666. Plywood is fabricated wood product in which sheets of veneer are combined with each other, or with lumber, with grain of adjacent sheets crossing, according to strength and thickness requirements.